



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/501,843

11/30/2004

Gerhard Bonnet

PTK0026

8953

832 7590 01/28/2009

BAKER & DANIELS LLP
111 E. WAYNE STREET
SUITE 800
FORT WAYNE, IN 46802

EXAMINER

BRAINARD, TIMOTHY A

ART UNIT

PAPER NUMBER

3662

MAIL DATE

DELIVERY MODE

01/28/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/501,843	Applicant(s) BONNET, GERHARD	
	Examiner TIMOTHY A. BRAINARD	Art Unit 3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 42-44 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 42 is a dependent claim that is dependent upon itself. Office action with be examined with claim 42 being dependent on claim 41.

Claim Objections

3. Claim 23 is objected to because of the following informalities: Claim 23 recites "...and laser light radiation not coming from the object is brought to interference so as to detect a beat signal of the plurality of frequency components that change with time in a chirping manner and which are comprised in the laser light radiation coming from the object at the distance to be determined interfering with the plurality of frequency components that change with time in a chirping manner and which are comprised in the light radiation not coming in from the object and to allow for the determination of the distance of the object from the beat signal;..." It is unclear what is not clear what is causing the beat signal (beam reflected from the object and what is causing the interference (beam reflected by everything else). Claim 23 also recites "...means for modifying for adjusting the narrow banded seed laser light and the chirp rate to one another such that for a given distance the intensity of the beat signal is increased." IT is unclear what the chirp rate to one another is modifying. Appropriate correction is

Art Unit: 3662

required. With respect to claim 23, the laser radiation being usable for determinations of distances of objects when using the object detection sensor which receives laser light radiation coming from an object illuminated with the emitted light and being at a distance to be determined and laser light radiation not coming from the object is brought to interference so as to detect a beat signal of the plurality of frequency components that change with time in a chirping manner and which are comprised in the laser light radiation coming from the object at the distance to be determined interfering with the plurality of frequency components that change with time in a chirping manner and which are comprised in the light radiation not coming in from the object and to allow for the determination of the distance of the object from the beat signal is the intended use for the laser radiation.

4. Claim 44 is objected to because of the following informalities: Claim 44 recites "...wherein the beat intensity of laser radiation coming in from the object interfering with laser radiation coming in not from the object at the position sensitive sensor is determined as a distance indicative signal...". It is not clear which signal is indicative of the distance. Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 3662

6. Claims 23, 24, 28-31, 33-34, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Phillips** et al (US 5835199) in view of **Gabl** et al (US 5592237). Phillips teaches (claim 23 and 44) an object detection sensor, a frequency shifted laser radiation source for distance measurements, comprising: a frequency shifted feedback laser; the laser radiation being usable for determinations of distances of objects when using an object detection sensor which receives laser light radiation coming from an object illuminated with the emitted light and being at a distance to be determined and laser light radiation not coming from the object is brought to interference so as to detect a beat signal of the plurality of frequency components that change with time in a chirping manner and which are comprised in the laser light radiation coming from the object at the distance to be determined interfering with the plurality of frequency components that change with time in a chirping manner and which are comprised in the light radiation not coming in from the object and to allow for the determination of the distance of the object from the beat signal; wherein the frequency shifted feedback (abs and col 2, line 56 to col 3, line 10 col 7, lines 29-47 and claim 65), (claim 28) the means for modulation is adapted to vary the modulation frequency around a signature frequency of $\nu = a \times c \times \frac{1}{2L}$, wherein a -- chirp rate, c = speed of light, and L = distance to be determined (col 2), (claim 24) the means for modulating is a means for modulating the seed laser light (abs), (claim 29) the modulation frequency is periodically varied around the signature frequency of $\nu = a \times c \times \frac{1}{2L}$, (claim 30) the means for modulation is adapted to vary the modulation frequency periodically linear with time (col 2), (claim 35) the gain medium of the frequency shifted feedback laser is

Art Unit: 3662

constituting the resonator (abs).Phillips does not teach resonator having a pumped gain medium therein so as to emit laser light having a plurality of frequency components changing with time in a chirping manner for irradiation of an object with laser light radiation a laser radiation source further comprises a means for injection of narrow banded non-pumping seed laser light into the resonator and a means for modulation to adjusting the narrow banded seed laser light and the chirp rate to one another such that for a given distance the intensity of the beat signal is increased. Gabl teaches (claim 23 and 44) resonator having a pumped gain medium therein so as to emit laser light having a plurality of frequency components for irradiation of an object with laser light radiation a laser radiation source further comprises a means for injection of narrow banded non-pumping seed laser light into the resonator and a means for modulation to adjusting the narrow banded seed laser light and the pulse rate to one another such that for a given distance the intensity of the beat signal is increased (abs), (claim 34) the injection laser is a single mode laser (Abs). It would have been obvious to modify **Phillips** to include resonator having a pumped gain medium therein so as to emit laser light having a plurality of frequency components changing with time in a chirping manner for irradiation of an object with laser light radiation a laser radiation source further comprises a means for injection of narrow banded non-pumping seed laser light into the resonator and a means for modulation to adjusting the narrow banded seed laser light and the chirp rate to one another such that for a given distance the intensity of the beat signal is increased because it is merely substitution of a well known system with no new or unexpected results. With respect to claim 31, while Phillips in view of Gabl does not teach the

Art Unit: 3662

means for injection of seed laser light is an injection laser adapted to increase the beat intensity of the frequency shifted laser emitted frequency components at the object sensor beyond the intensity which can be obtained with spontaneous emission in the resonator of the frequency shifted feedback laser only. It would have been obvious to modify Phillips in view of Gabl to include the means for injection of seed laser light is an injection laser adapted to increase the beat intensity of the frequency shifted laser emitted frequency components at the object sensor beyond the intensity which can be obtained with spontaneous emission in the resonator of the frequency shifted feedback laser only because it is one of multiple design choices with no new or unexpected results. With respect to claim 33, while Phillips in view of Gabl does not teach the injection laser has a frequency width of less than 5 % of the gain of the frequency shifted feedback laser radiation gain medium. It would have been obvious to modify Phillips in view of Gabl to include the injection laser has a frequency width of less than 5 % of the gain of the frequency shifted feedback laser radiation gain medium because it is one of multiple design choices with no new or unexpected results.

7. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Phillips** in view of **Gabl** as applied to claim 24 above, and further in view of Goldberg et al (US 5745284). Goldberg teaches the means for modulating the seed laser light is a means for amplitude modulation of the seed laser light (col 2, line 60 to col 3, line 5). It would have been obvious to modify **Phillips** in view of **Gabl** to include the means for modulating the seed laser light is a means for amplitude modulation of the seed laser light because it is one of multiple design choices with no new or unexpected results.

Art Unit: 3662

8. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Phillips** in view of **Gabl** as applied to claim 24 above, and further in view of **Palese** (US 6570704). **Palese** teaches the means for modulating the seed laser light is a means for phase modulation of the seed laser light (col 2, line 60 to col 3, line 5). It would have been obvious to modify **Phillips** in view of **Gabl** to include the means for modulating the seed laser light is a means for phase modulation of the seed laser light because it is one of multiple design choices with no new or unexpected results.

9. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Phillips** in view of **Gabl** as applied to claim 23 above, and further in view of **Mocker et al** (US 5394235). **Mocker** teaches the seed light has a wavelength close to the wavelength where the gain of the pumped gain medium is unity so that amplification of the seed laser light occurs at latest after a few resonator round trips (col 7, lines 37-63). It would have been obvious to modify **Phillips** in view of **Gabl** to include the seed light has a wavelength close to the wavelength where the gain of the pumped gain medium is unity so that amplification of the seed laser light occurs at latest after a few resonator round trips because it is one of multiple design choices with no new or unexpected results.

10. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Phillips** in view of **Gabl** as applied to claim 31 above, and further in view of **Shanttil** (US 5955992). **Shanttil** teaches the injection laser injects the non-pumping injection laser light into the gain medium of the frequency shifted feedback laser (col 6, lines 22-50). It would have been obvious to modify **Phillips** in view of **Gabl** to include the injection laser injects the non-pumping injection laser light into the gain medium of the frequency

Art Unit: 3662

shifted feedback laser because it is one of multiple design choices with no new or unexpected results.

11. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Phillips** in view of **Gabl** as applied to claim 35 above, and further in view of McEwan (US 6462705). McEwan teaches a means is provided for changing the seed frequency in a stepwise manner and wherein said means for changing is adapted to maintain the seed frequency constant for a given measuring time T and/or to wobble around an average value of a respective seed frequency value (col 2, lines 1-10). It would have been obvious to modify **Phillips** in view of **Gabl** to include a means is provided for changing the seed frequency in a stepwise manner and wherein said means for changing is adapted to maintain the seed frequency constant for a given measuring time T and/or to wobble around an average value of a respective seed frequency value because it is one of multiple design choices with no new or unexpected results.

12. Claim 37-38 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Phillips** in view of **Gabl** in view of McEwan as applied to claim 35 above, and further in view of Shafer et al (US 6459483). Shafer teaches a filter for filtering the beat intensity related object sensor signals determined at the object detecting sensor, the filter is adapted for filtering of components changing with the seed frequency (fig 14 and col 7, line 54 to col 8, line 7). It would have been obvious to modify **Phillips** in view of **Gabl** in view of McEwan to include a filter for filtering the beat intensity related object sensor signals determined at the object detecting sensor, the filter is adapted for filtering of

Art Unit: 3662

components changing with the seed frequency because it is one of multiple design choices with no new or unexpected results.

13. Claim 39-40 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Phillips** in view of **Gabl** in view of McEwan in view of **Shafer** as applied to claim 35 above, and further in view of **Daniels** (US 3182312). Daniels teaches a signal amplification for object detection sensor signals having an amplification stage subsequent to a filter stage and at least one regulating or control circuit for setting a given amplification (col 15, lines 2-15). It would have been obvious to modify **Phillips** in view of **Gabl** in view of **McEwan** in view of **Shafer** to include a signal amplification for object detection sensor signals having an amplification stage subsequent to a filter stage and at least one regulating or control circuit for setting a given amplification because it is one of multiple design choices with no new or unexpected results. With respect to claim 40, Phillips teaches a stage for determining a distance in response to an object detection sensor signal signature as a function of seed frequencies (abs).

14. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Phillips** in view of **Gabl** in view of **McEwan** in view of **Shafer** in view of Daniels as applied to claim 35 above, and further in view of Tonietto (US 6331792). Tonietto teaches the stage for determining the distance according to the object detection sensor signal signature in response to the seed frequency is adapted to determine the distance in response to reaching a maximum value of the object detecting sensor signal at a given frequency (col 1, lines 20-41). It would have been obvious to modify **Phillips** in view of **Gabl** in view of **McEwan** in view of **Shafer** in view of Daniels to include the stage for

Art Unit: 3662

determining the distance according to the object detection sensor signal signature in response to the seed frequency is adapted to determine the distance in response to reaching a maximum value of the object detecting sensor signal at a given frequency because it is one of multiple design choices with no new or unexpected results.

Allowable Subject Matter

1. Claims 42-43 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments with respect to claims 23-44 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 3662

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMOTHY A. BRAINARD whose telephone number is (571) 272-2132. The examiner can normally be reached on Monday - Friday 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on (571) 272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/501,843
Art Unit: 3662

Page 12

/T. A. B./
Examiner, Art Unit 3662

/Thomas H. Tarcza/
Supervisory Patent Examiner, Art Unit 3662